Appendix C
Management Recommendations from the Elk Creek Watershed Analysis

IV. MANAGEMENT RECOMMENDATIONS

A. INTRODUCTION

The purpose of this Chapter is to summarize the findings from previous Chapters and provide management recommendations to Federal land managers for public lands. The following recommendations include general analytical recommendations as well as recommendations that are responsive to the Issues and Key Questions from Chapter III. Throughout the discussions, needs for restoration have been incorporated. Section D. summarizes monitoring needs and Section E. provides an integrated set of management options based on landscape types and features.

B. GENERAL ANALYTICAL RECOMMENDATIONS

This Section captures recommendations that are primarily applicable to any subsequent analysis within the Elk Creek Watershed. These could include the next version of Watershed Analysis, either on the watershed or subwatershed scale, the next version of Late-Successional Reserve Assessment (watershed or Reserve specific) and/or any further analysis done for specific projects. In many ways, these recommendations would assist in filling data gaps uncovered during this process.

- Future landscape assessment and/or project analysis should include field verification of stream classes, location and morphology, their order of importance related to need and restoration opportunities within the watershed, and their status related to providing for beneficial uses.
- Subsequent planning and analysis should continue to validate reforestation access needs, public access needs and access needs for fire management.
- Comprehensive (cumulative effects) analysis to evaluate the hydrologic condition of the watershed should be done at the subwatershed scale.
- Data that evaluates owl demographics should continue to be collected.
- Data should be collected to determine and prescribe the amount and distribution of large coarse woody debris and snag densities.
- When closing Level 1 roads, review on a case-by-case basis the need for and effects of removing existing culverts.
- Update all Allotment Management Plans to assess the implications of the Northwest Forest Plan on the grazing program.
- Survey stream reaches every ten years or after 25 year flood events to determine changes and trends in aquatic habitat.
- Forest Service administered sections 1 & 11, and portions of sections 3, 13 & 15 in the Morine Creek area, (T.33S., R.1W., Jackson County), are recommended for re-allocation to LSR, where National Forest Land is contiguous with the LSR designation on BLM administered land. This may require an analysis and decision under NEPA.
- Complete Watershed Improvement Needs (WIN) inventory work to identify restoration needs related to existing roads.
- Resolve mapping discrepancies between Forest Service and Bureau of Land Management associated with big game winter range habitat.
- Work toward integrating Forest Service and Bureau of Land Management geographic information databases.

C. ACTIONS TO ADDRESS ISSUES

The format for this section borrows from Chapter III by summarizing the Issues and the Findings for the Elk Creek Watershed, the implications of these findings, the underlying objective(s), and statements or listings of recommended management actions.

1. Anadromous Fish Habitat - Hydrology

Findings: Human activities and artifacts, such as the presence of roadways within floodplains, have tended to create straightened channels which provide little resistance to water movement. The cumulative effects associated with past human activities have resulted in a limited amount of high quality, well-distributed salmonid habitat and is likely to have reduced overall survival rates of cutthroat and steelhead trout. The result has been an overall increase in the velocity and quantity of water flows during and shortly after storm events, which:

- periodically have dislodged debris jams,
- caused channels to down-cut and become confined (some streams can no longer reach the original floodplain even during flood events),
- increased the quantity, size and distance suspended particles are being transported, and
- increased the severity of streambank erosion and associated amounts of soil deposition.

In addition, alterations and removal of riparian vegetation, particularly the harvest of overstory conifer trees, as well as activities associated with road building, grazing and rural developments have:

- caused a reduction in the amount and distribution of streamside shade and large woody debris,
- reduced bank stability, and
- modified the morphology of many channels.

The way in which water is being captured, stored and released has been altered as a result of cumulative past human activities, primarily related to road building, timber harvesting, ranching and rural development. The result has been:

- an increase in stream temperatures, (five streams are considered to be "water quality limited" by the DEQ under the Federal Clean Water Act) including: Bitter Lick, Sugarpine, West Branch Elk Creek, Hawk (from the Mouth to the Headwaters) and Elk Creek (from the Mouth to Bitter Lick),
- occasional peaks in turbidity above natural rates, and
- increased rates and quantities of runoff and soil transport during and shortly after storm events, applicable to areas where runoff cannot infiltrate and becomes concentrated, primarily associated with impermeable road surfaces.

Recommendations: Restore anadromous fish habitat to increase survival rates by improving the abundance and quality of spawning gravels, deep pool habitat, side channels, overwintering habitat (channel structures and log jams which can shelter fish), while maintaining water temperatures and quality that can sustain multiple fish species within the Elk Creek Watershed.

The following specific recommendations would allow progress toward these objectives:

- encourage the development of late-successional riparian vegetation which would be typical and expected within the Elk Creek Watershed, especially where overhanging cover and root structure is lacking or where streambanks are eroding,
- reduce surface erosion and channeling of runoff within floodplains by reducing or eliminating known, identified sediment sources,
- encourage water conservation to increase summer base flows,
- provide shelter/cover for juvenile salmonids in pools by creating debris structures,
- protect fingerlings from traveling into water diversion channels by placing screens at diversion sites,
- slow down high water flow rates where feasible by placing large logs within channels, by creating side channels, and

encouraging beaver colonization,

- restore slope-bound and alluvial valley stream segments to include low stream gradients with a high width-to-depth ratio and meandering side channels where feasible,
- encourage cooperative/voluntary participation of landowners, groups and agencies when planning and implementing watershed restoration projects within the floodplain of Elk Creek,
- protect known beaver habitat,
- remove obstructions to allow for fish migration for multiple fish species and life stages throughout the entire mainstem of Elk Creek by eliminating passage problems at all known human-created passage barriers,
- implement stream-specific recommendations for fisheries contained in the Aquatic Ecosystem Report, Appendix K, and Forest Service 1990 stream survey report (available at the Prospect Ranger District),
- import and place large wood in stream channels where amounts are considered deficit, taking into consideration landform, stream gradient, and floodplain width,
- encourage the development of conifer dominated late-successional Riparian Reserves, especially in West Branch Elk Creek (BLM),
- enhance or develop side channels/riparian areas, especially along West Branch Elk Creek, Sugarpine Creek, Flat Creek, Bitter Lick Creek and on the maintstem of Elk Creek, where feasible, and

Allow for the recovery of hydrologic conditions by:

- maintaining Riparian Reserve widths as recommended by the Northwest Forest Plan. Conduct specific analysis that determines conditions to attain Aquatic Conservation Strategy objectives, and
- coordinate with private land owners to encourage restoration on non-Federal lands.

2. Fire Risk - Reintroduction of Fire

Findings: This watershed has missed 2-3 natural fire cycles which has resulted in a moderate to high fire hazard (based on vegetative and climatic conditions, related to topography). Records of human and natural fire starts, which average 14.5 starts per year, combined with known evidence of fire such as charred stumps, logs and snags, suggest that fire events will occur. However, when, where, at what intensity and to what extent is difficult to predict. The implementation of the Northwest Forest Plan will generally result in further increases in vegetative densities, increased amounts of ground fuels (depending on future management activities), and most likely, slower access for fire suppression vehicles caused by reduced road maintenance and road decommissioning.

The safe re-introduction of fire within the Elk Creek Watershed would be complicated by:

- the exclusion of fire in most of the watershed which has resulted in large, continuous areas being characterized by moderate to heavy down fuels and densely growing, multi-layered vegetation, (increasing the difficulty and cost of containing controlled burns),
- the “checker board” ownership pattern in the southern half of the watershed,
- the presence of steep, rugged terrain which tends to favor preheating and drying of vegetation ahead of the fire front increasing risk of escape, limits feasible options for control methods, increases implementation costs, and poses logistical challenges for providing safe holding and fire line sites,
- limited vehicle access (primarily associated with the Bitter Lick Roadless Area),
- various vegetative types, some of which are highly flammable,

- limited funding and personnel, and

- restrictions placed on controlled burning associated with the Rogue River National Forest Smoke Management Plan, Oregon Smoke Management regulations and the Clean Air Act for air quality.

Recommendations: Protect values and resources associated with Late-Successional Reserves, the Tier 1 Key Watershed, public and private facilities and human life by:

- introducing controlled fire where fire risk and hazards are moderate to high and where protection of resources is most critical,

- applying fire in such a way as to maintain duff and litter by burning at a low to moderate intensity in a mosaic type pattern, which may include several repeated treatments. Recommend initiating fire hazard reduction activities in Fuel Models 8 & 10 (closed-canopy white fir and white oak), and

- by applying commercial thinning, precommercial thinning and pruning as methods to separate tree crowns and continuous fuels, along with treating slash (3 inches diameter plus). Slash treatments should occur soon after thinning activities are completed.

3. Late-Successional Conditions

Findings: The watershed is composed of 18.2 % late-successional forests, with 14,079 acres being located on public lands. Most late-successional forests tend to be located in irregularly-shaped patches scattered throughout the mid to upper elevations. Of the late-successional vegetation type on public lands, approximately 90% lies within the Late-Successional Reserve allocation.

An estimated 27,800 acres, or 32%, is currently providing suitable habitat for the northern spotted owl on Federally administered lands. While it is not known what type of vegetative patterns and composition should exist in the designated Late-Successional Reserves to ensure the viability of 20 owl pairs (one of the goals of the LSR), it is recommended that the short-term objective (10 years) should be to maximize the extent of late-successional habitat. Although fifty-four historic owl sites were identified within the watershed, in the last decade, populations have declined.

Recommendations: Increase the amount and size of late-successional forest patches and vegetative conditions by:

- managing stands to develop multi-aged and multi-layered characteristics through thinning and uneven-aged management,

- maintaining oak woodlands,

- maintaining ponderosa and sugar pine components where historical or present occurrence is evident; apply density management around existing (large) ponderosa and sugar pines (BLM and FS) to maintain those components,

- experimenting with various silvicultural treatments in representative types to see how vegetation responds,

- on BLM lands, brushing and precommercial thinning stands in early-successional conditions to accelerate the development of late-successional characteristics (fire recommends accomplishing as early as possible to reduce fuels buildup). Of note are the Flat Creek, W. Branch Elk Creek, Timber Creek and the Burnt Peak Fire Area, and

- on FS administered land, considering opportunities for density management in “off-site” pine stands. Lack of species diversity, especially for sugar pine, may be a concern and an opportunity in the upper portions of the watershed.

4. Public Access

Findings: Federally appropriated road maintenance dollars and funding generated by commercial timber revenues have decreased drastically since the early 1980’s, resulting in an inability to maintain Federally-administered roadways to current management standards. The result has been:

- maintenance Level 1 roads, which would normally be barricaded after activity use is completed, are accessible to vehicle traffic,
- some roadway signs have deteriorated,
- the need to seasonally close roads without the funding or people required to enforce restrictions,
- unregulated off-road vehicle use,
- sediment production related to rapid runoff and channeling of water along roadways, and
- the presence of hazard trees in proximity to roads that can threaten human safety for forest users.

Road densities by sub-watershed range from 2.24 to 7.29 miles per square mile. An estimated 57% of the watershed contains greater than 6 miles per square mile. The result of moderate to high road densities has been:

- increased water discharge rates, peak flow quantities, and turbidity,
- straightening of stream channels, reduction in the number of side channels and increased deposition, and
- increased disturbance and poaching of blacktail deer and elk.

Recommendations: Reduce the number of road miles accessible to vehicle use and associated maintenance costs on Federally-administered Maintenance Levels 1 and 2 roads by:

- decommissioning Maintenance Level 1 roads not needed for timber stand improvement, fire suppression access, or commercial activities (eventually ALL Level 1 roads should be considered for decommissioning within designated LSR's).
- applying and enforcing seasonal use restrictions,
- reducing maintenance level objectives or standards, where appropriate,
- designing future projects (such as timber sales) so that they permit or generate funding to accomplish or assist with road closing, constructing barricades, and road decommissioning.

Reduce road-related soil transport, particularly within or in proximity to stream channels and floodplains by:

- repairing fillslopes, travelways, cutslopes, ditches and culverts where down-cutting, surface rutting, puddling, and other signs of erosion are occurring,
- limiting vehicular traffic during periods of wet weather on unsurfaced roadways, and
- relocating the Bitter Lick and Sugarpine Trailheads (see discussion in Roads Recommendations section).

a) Specific Road Recommendations

National Forest: The following table displays recommendations for changing the way in which Forest Service administered roads should be managed. Access and Travel Management objectives were considered for various Forest Management activities including public, recreational, timber, timber stand improvement, fire and other special interests in relation to current Road Management Objectives (as of May 1996). Recommended changes to forest system roads and their status are described in the table below.

Table 14. Specific Road Recommendations for National Forest.

Recommended Action	Road Number	Current Maintenance Level	Length in Mile(s)	Section Of Road
Decommission	6610210	1	0.10	6610 to end
	6610550	1	0.11	6610 to end
	6610556	1	0.10	6610 to end
	6610635	1	0.57	Fawn C. P. to 6610
	6610816	1	0.15	6610810 to end
	6610817	1	0.10	6610810 to end
	6610842	1	0.14	6610800 to end
	6620300	1	0.20	6620 to end
	6620589	1	0.18	6620 to end
	6620593	1	0.09	6620590 to end
	6620610	1	0.10	6620 to end
	6620860	1	0.07	6620 to end
	6620890	1	0.10	6620 to end
	6640109	1	0.09	6640107 to end
	6640150	1	0.40	6640 to F.S. boundaries
	6640200	1	0.27	6640 to end
	6640245	1	0.20	6640250 to end
	6640320	2	0.30	6640 to end
	6640400	1	0.20	6640 to end
	6640450	1	0.10	6640 to 6640250
	6640505	1	0.20	6640500 to end
	6640562	1	0.03	6640560 to end
	6640815	1	0.40	6640810 to end
	6640830	1	0.15	6640 to end
	66028	1	0.13	6600020 to end
	66280	1	0.21	66 to end
	6600350	2	0.03	6600300 to end
	6600375	1	0.10	6600300 to end
	6600379	1	0.10	6600300 to end
	6600390	1	0.20	66 to end
	6600425	1	0.10	66 to end
	6600435	2	0.18	6600430 to end
	6470690	1	0.30	6470 to end
	6470720	1	0.20	6470 to end
	6470750	1	0.10	6470 to end
	6470780	1	0.40	6470 to end
	6470785	1	0.10	6470 to end
	6470790	1	0.10	6470 to end
	6470793	1	0.15	6470 to end
Change to Maintenance Level 2	6610	3	6.82	BLM road to end (1.52 Elk WA. Bdry.)
	6610600	3	4.29	6610 to 6620
	66300	3	3.93	66 to 6470
	6470	3	3.40	Boundary to 6640
Relocate the Bitter Lick Trailhead so that it could be accessed from road 6620 (would allow for the possible decommission of road 6620050). Coordinate with recreation.	6620050	2	0.28	6620 to private (last 0.4 mile is on private land).

Relocate the Sugarpine Trailhead so that it could be accessed from road 6610 (would allow for the possible decommission of road 6610050). Coordinate with recreation.	6610050	2	0.28	6610 to end
Change to Maintenance Level 1 and close/barricade	6620515	2	0.42	6620500 to end

Bureau of Land Management administered roads: The process for assigning Road Management Objectives has not been completed as of July 1996 for Bureau of Land Management administered roads. Future road review processes should consider opportunities to reduce road densities, especially when located on sidehills, lowland areas, or in big game winter range. In addition, the following criteria should be considered when determining future road decommissioning opportunities and priorities:

- roads less than 0.5 miles in length,
- roads that include multiple stream channel crossings,
- roads in proximity to Riparian Reserves and stream channels,
- natural surfaced roads (versus surfaced), and
- roads located on geologically unstable terrain, or where constructed on soils with a high potential for erosion.

5. Grazing

Findings: Livestock grazing is not a major human enterprise within the Elk Creek Watershed, and some of those who have permits with the Federal government, do so as a secondary source of income. The current costs and revenues associated with the grazing program for the Federal government are expected to continue into the future. Major resource effects resulting from livestock grazing and associated human practices such as diverting water for irrigation, development of pasture land, and road use include:

- the spread of non-native plant species,
- alteration of stream-side vegetation and channels (causing increases in stream temperatures and sedimentation), and
- reduction of summer base flows in streams.

Preliminary utilization/distribution inventories indicate that some areas are being underutilized by cattle, while other areas are being over utilized. Typically where water is available, utilization of forage is good. Where water is absent, utilization tends to be poor.

Recommendations: Regulate grazing practices to allow for good utilization of forage by:

- developing water sources to modify utilization patterns, in areas with poor utilization,
- increasing plant production by seeding with native, palatable plant species,
- decreasing the length of use, and controlling animal movement in underutilized areas,
- using grazing as a tool to control brush, prepare seed beds for planting, and as a way to obtain income from forested lands, and
- seeding along some roadsides and in strategic locations to increase available forage.

Criteria to consider as part of managing forest-range program within those allotments in Elk Creek Watershed should include:

- physical and biological feasibility and consequences,
- economic feasibility,
- social acceptability, and
- operational practicality.

6. **Timber Harvesting - Economics**

Findings: While timber harvesting activities have significantly declined in the last five years, expenditures related to designing, implementing and administering timber sales have increased. The result has been:

- a reduction in timber sale receipts which supported road maintenance, timber stand improvement activities such as precommercial thinning and reforestation, and other restoration or enhancement projects,
- decline in the amount of commercial timber volume supplied to local wood processing companies,
- decline in available public use firewood cutting areas,
- an overall trend of increased logging system costs, and
- limited opportunities for small logging enterprises.

Recommendations: Use timber harvesting/logging as a tool to manage vegetation to meet Matrix, Late-Successional Reserve, and Riparian Reserve land allocation objectives. Implementation should include:

- prioritizing efforts to encourage the development of new markets and products to maximize the value of small diameter material, and
- considerations for applying various silvicultural prescriptions which address multiple resource objectives (refer to Table 15.).

D. MONITORING

Ongoing monitoring efforts within the watershed should include:

- Monitor trends in juvenile salmonid use and abundance at all aquatic habitat restoration projects.
- Continue stream temperature and stream flow monitoring.
- Monitor the aquatic benthic macro invertebrate community to determine changes and trends in the benthic community over time and as a result of implementation of aquatic habitat restoration projects.
- Continue to monitor adult anadromous salmonid escapement into Elk Creek.
- Monitor soil conditions to evaluate the effects of vegetation manipulation prescriptions as related to landscape structure and design strategy.
- Continue to monitor spotted owl demographics as an indicator of watershed health in the portion designated as LSR.
- Monitor road conditions and drainage.

- Monitor plantations for survival, vegetative competition and development.
- Monitor fuel levels and associated fire hazards.
- Monitor the scope and intensity of insect and disease occurrences.
- Monitor coarse woody debris levels and snag densities.
- Monitor terrestrial wildlife species habitat and distribution.
- Monitor non-native plant populations and encroachment.
- Monitor water diversions and compliance with water use permits.
- Monitor recreational use, hunting levels and use of special forest products.
- Monitor the effects of grazing on late-successional, riparian and aquatic values.